Automated Transport Vehicle

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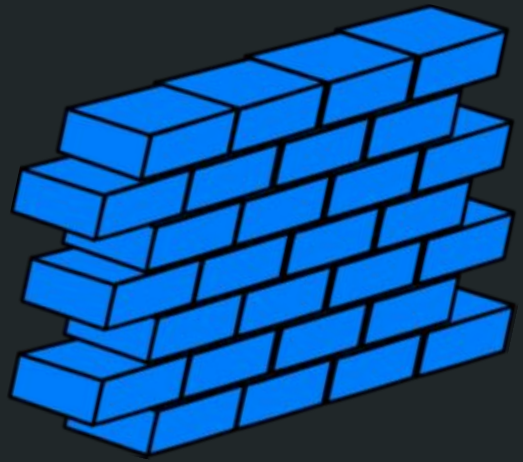
Why use the ATV?

- Injury
- Too many items
- Items too heavy to carry

Why are personal transport vehicles uncommon?



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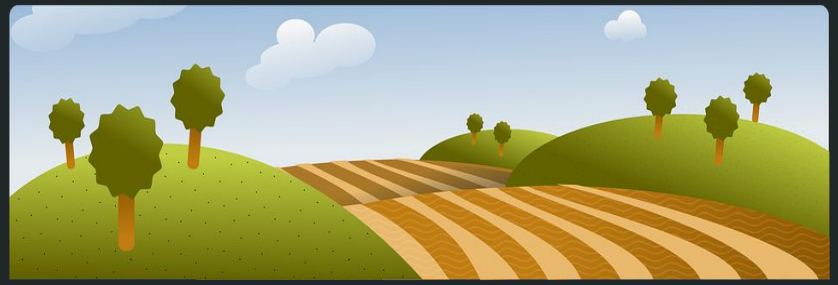
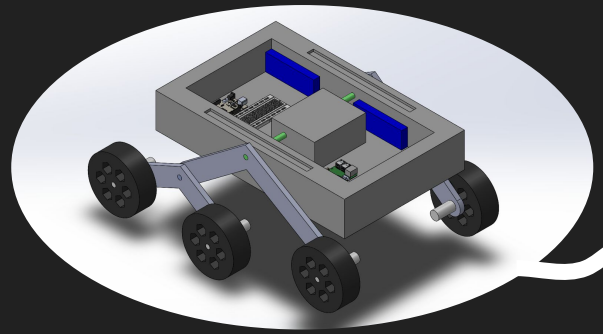
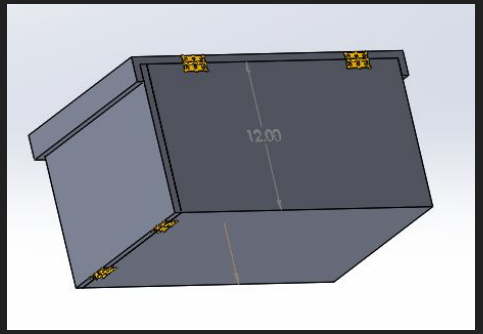


VS

3 Main Components

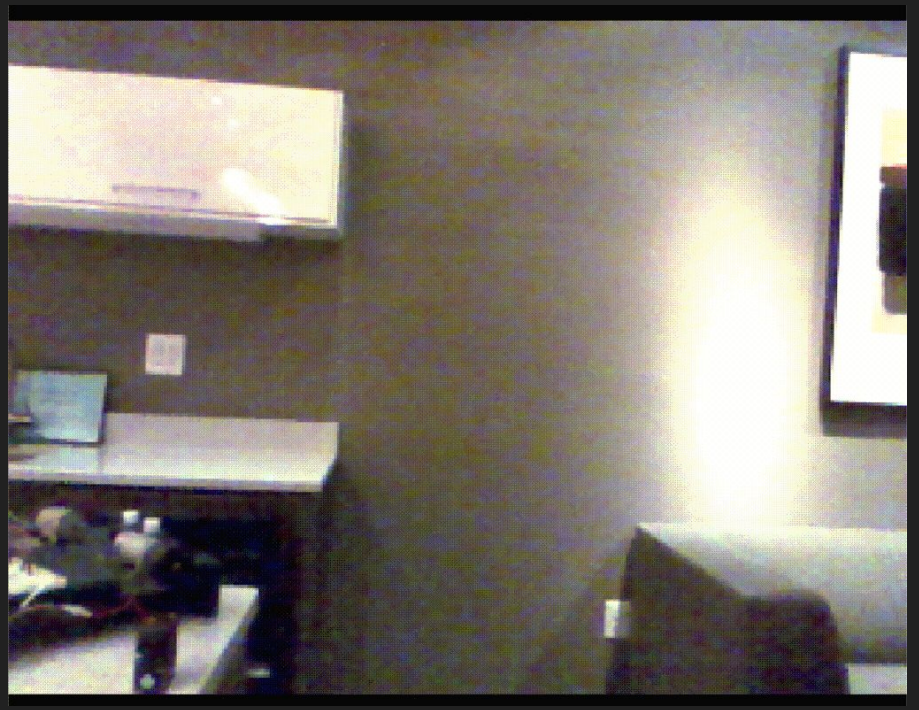
1. Robot Chassis
2. Cargo Enclosure
3. Tracking/Control Mechanism





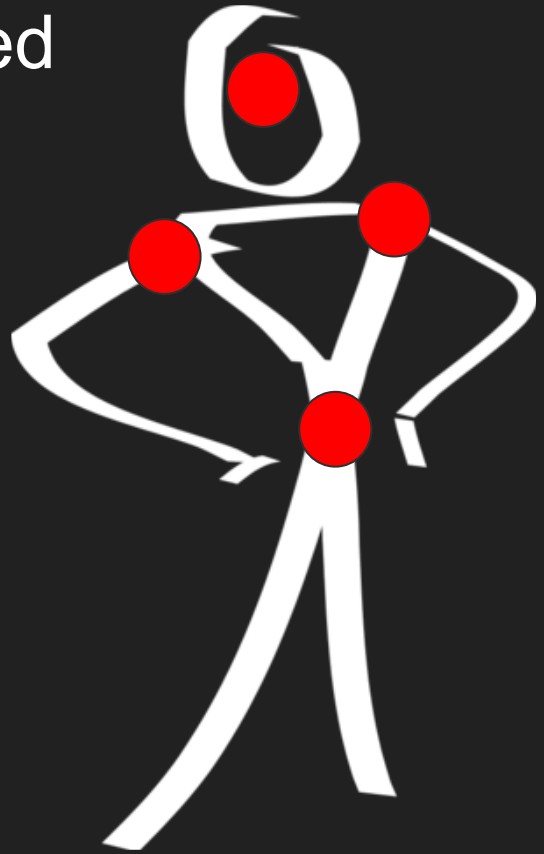
Challenges of User Tracking

- Identifying users
- Isolating target user
- Following target user

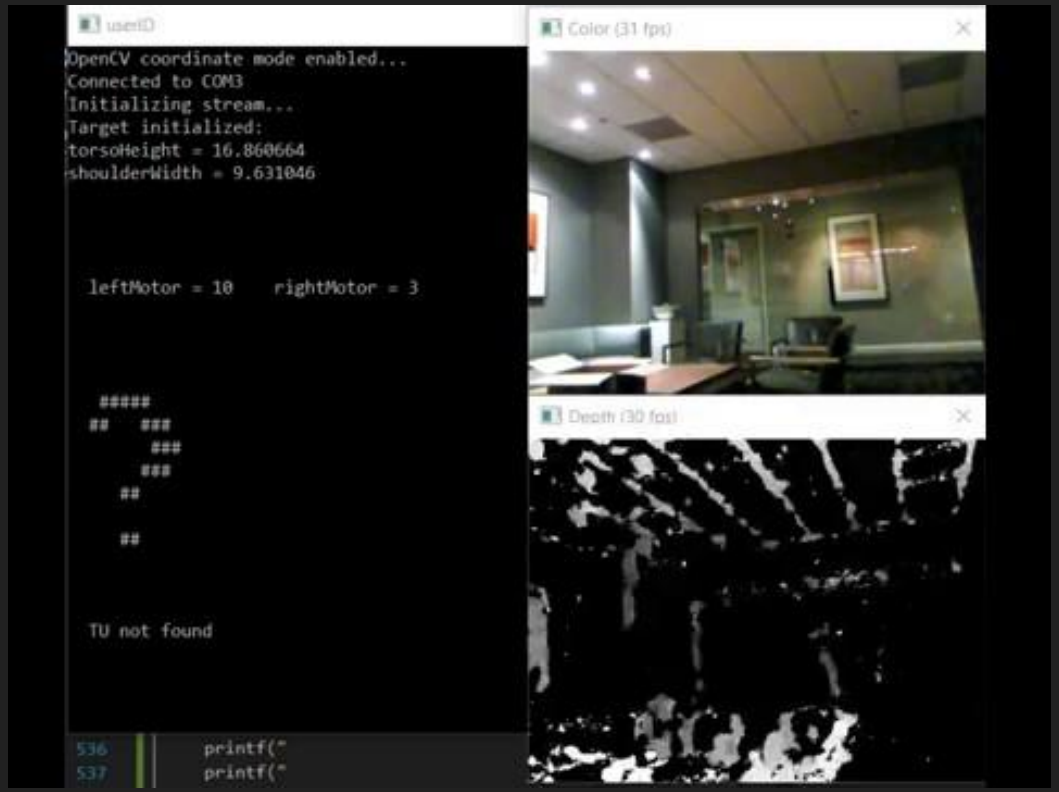


Information Gathered and Processed

- 5 joints to classify users
  - X, Y, Z position in space
  - Shoulder width, mid-section height
- Previous locations
- User ID

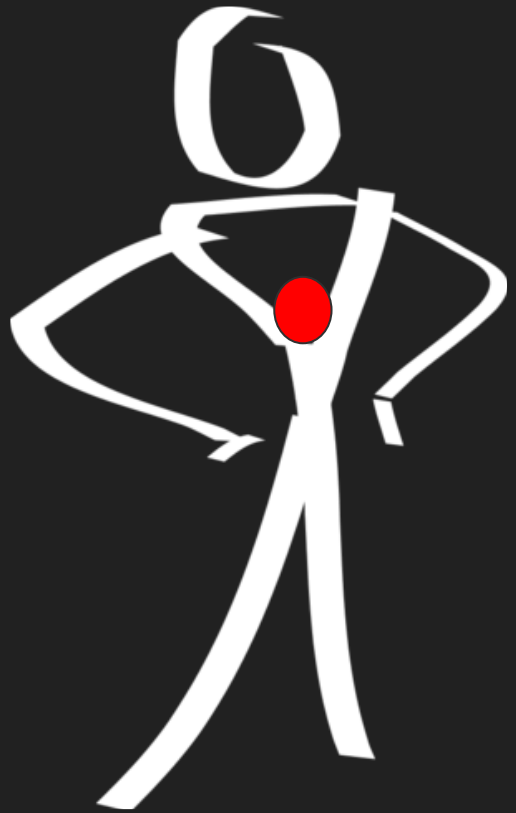


DEMO


OpenCV coordinate mode enabled...
Connected to COM3
Initializing stream...
Target initialized:
torsoHeight = 16.860664
shoulderWidth = 9.631046
leftMotor = 10 rightMotor = 3
TU not found
Color (31 fps)
Depth (30 fps)
printf("
printf("

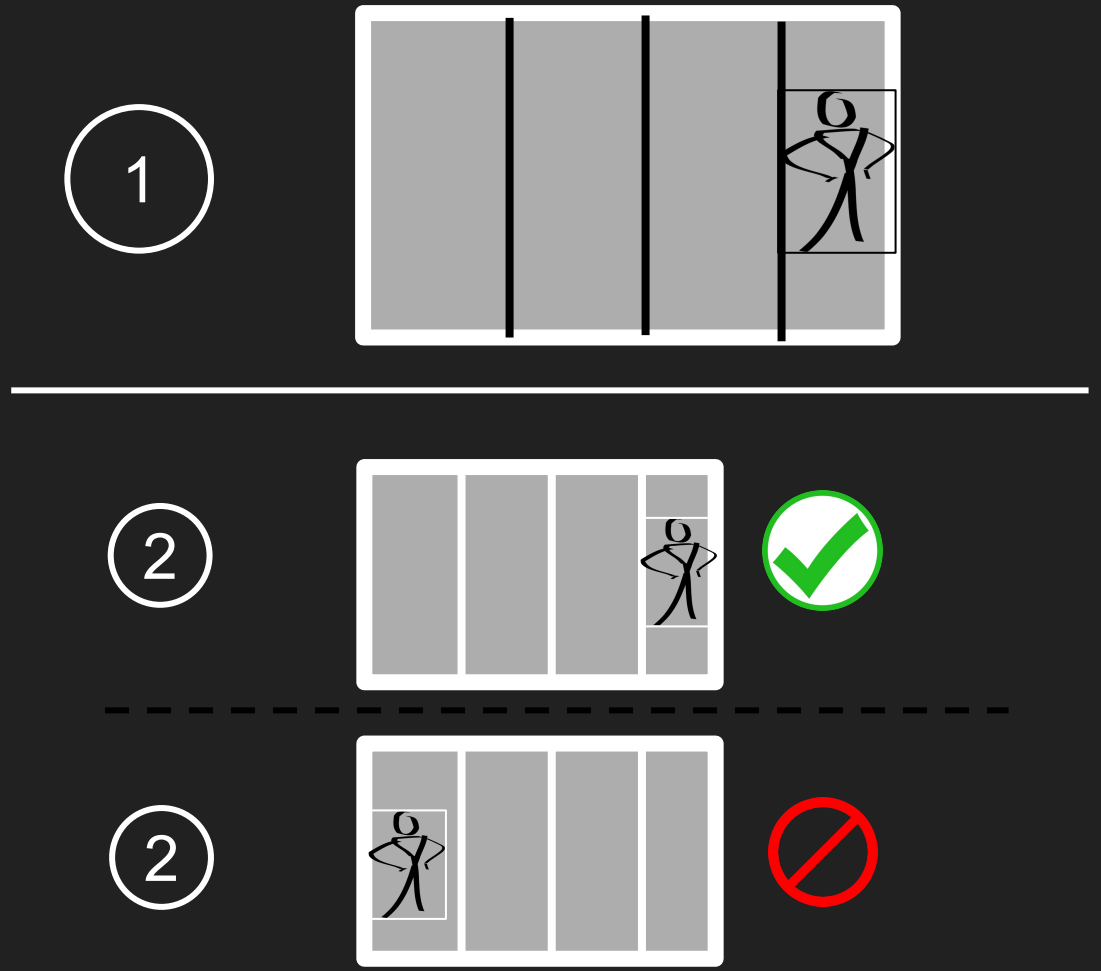
Visible Target User

1. Follow target user using center of mass point data
2. Calculate movement controls
3. Send to motors



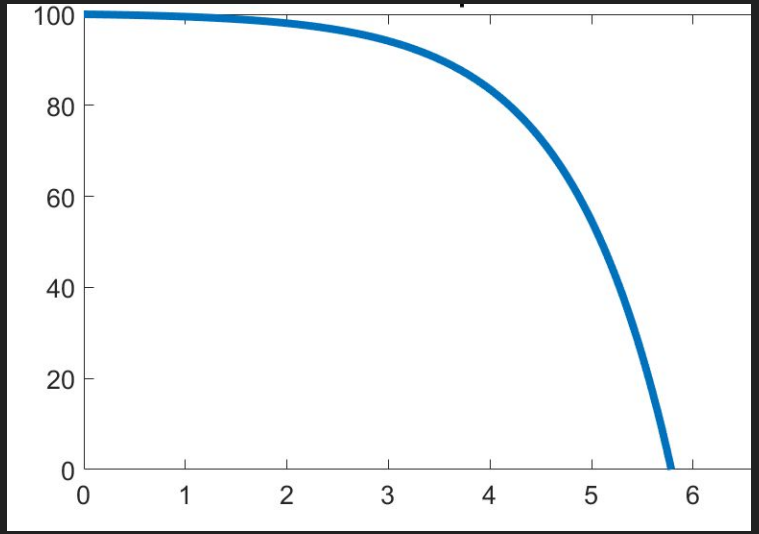
Target User Confusion

- May occur when:
  - user disappears from field of view
  - multiple users

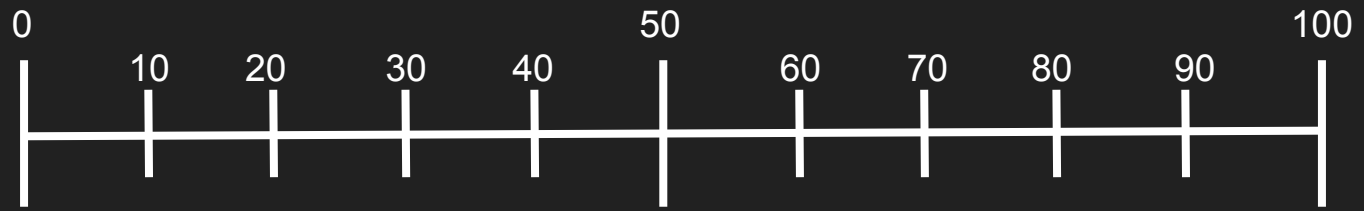


Confidence Values

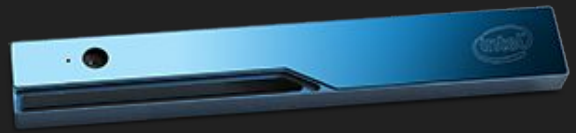
- Start high, drop off quickly
- User quantifiers (last known location, joints) combined into single confidence value

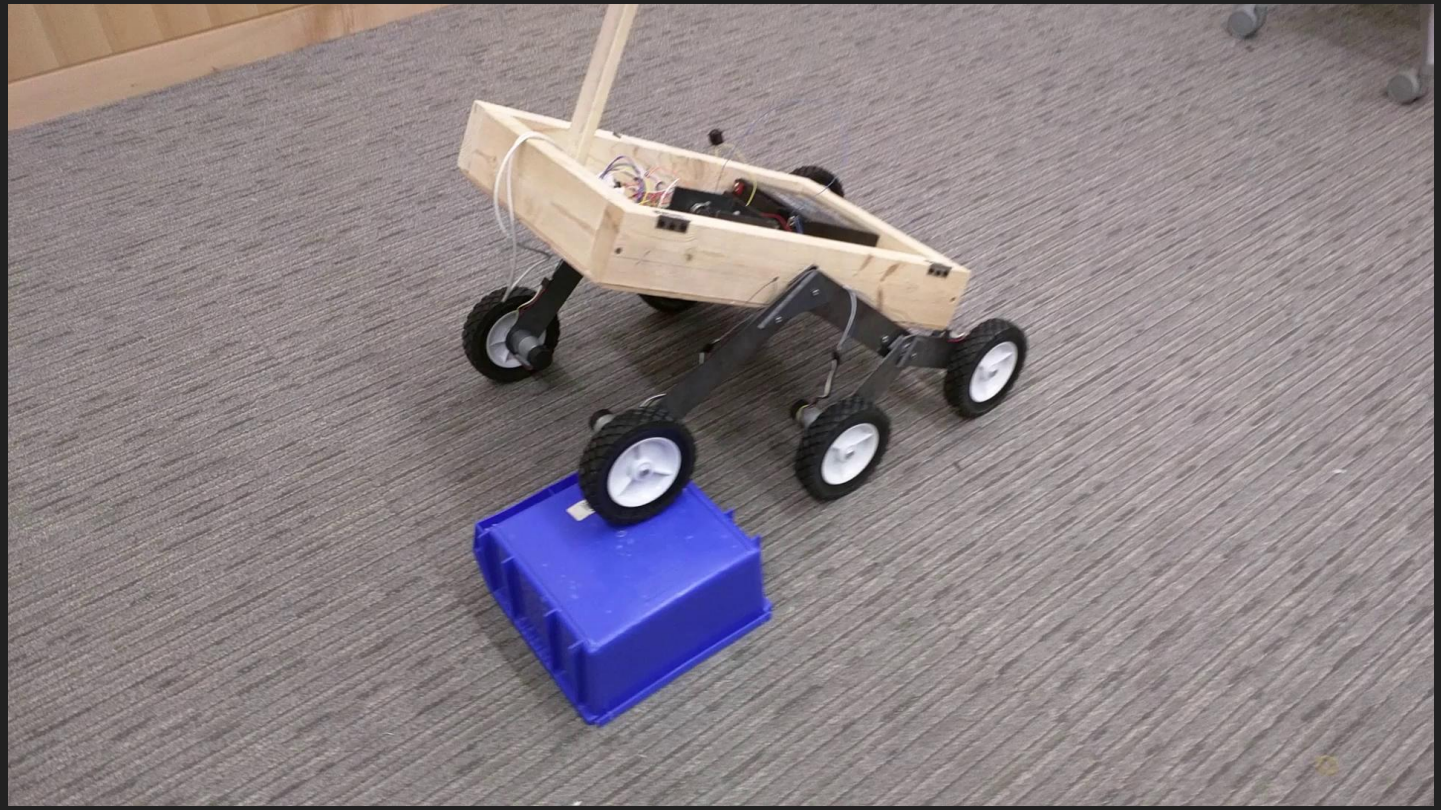


- Utilized when ATV loses track of target user



Helpful Tech



Visual Studio

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